

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Dias, <i>et al.</i>	Conf. No.:	4341
Serial No.:	09/925,353	Art Unit:	2151
Filing Date:	08/09/2001	Examiner:	Divecha, Kamal B.
Title:	SYSTEM AND METHOD FOR ENHANCING LOAD CONTROLLING IN A CLUSTERED WEB SITE	Docket No.:	FR91990105US1 (IBMR-0130)

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BRIEF OF APPELLANTS

This is an appeal from the Rejection dated May 15, 2006, rejecting claims 1 and 3-8.
This Brief is accompanied by the requisite fee set forth in 37 C.F.R. 1.17 (c).

REAL PARTY IN INTEREST

International Business Machines Corporation is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

As filed, this case included claims 1-8. Claim 2 was previously canceled. As a result, claims 1 and 3-8 remain pending. Claims 1 and 3-8 stand rejected and form the basis of this appeal.

STATUS OF AMENDMENTS

No amendment has been submitted in response to the After Final Rejection filed by the Office on November 3, 2006.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention provides an enhancement for a Web site using HTTP and assumed to be comprised of a plurality of individual servers, including a Network Control Scheduler (NCS). Any individual server may issue instructions to NCS. They are passed to NCS in a NCS-control HTTP header which includes directives that must be obeyed. Directives fall in three categories, namely: flow-control directives, sharing directives and NCS-queuing directives. A filter which limits their scope of application may be optionally included.

Claim 1 claims a method for enhancing load controlling of a Web site (see e.g., Fig. 2, item 220) including a plurality of individual servers (see e.g., page 6, lines 4-7; Fig. 2, items 210-216) and a Network Control Scheduler (NCS) (see e.g., page 6, lines 7-8; Fig. 2, item 224), said Web site using Hyper Text Transport Protocol (HTTP) (see e.g., page 6, lines 1-4; Fig. 3, items 230, 240, 250 and 260), said method comprising the steps of: in any one server out of said plurality of individual servers: issuing load balancing instructions to said NCS by passing said load balancing instructions to said NCS in a NCS-control HTTP header (see e.g., page 14-15; Fig. 3, item 250), including the steps of: including directives that must be obeyed by said NCS (see e.g., page 7, line 15); and optionally, including a filter to limit a scope of application of said directives (see e.g., page 7, line 18 through page 8, line 7); receiving said load balancing instructions in said NCS from said any one server (see e.g., page 7, lines 14-15); and complying

with said load balancing instructions upon receipt (see e.g., page 7, lines 14-15), wherein the any one server out of said plurality of individual servers is adapted to issue the load balancing instructions that apply to any of the plurality of individual servers (see e.g., page 4, lines 4-6).

Claim 7 claims a system, in particular a Network Control Scheduler (NCS) (see e.g., page 6, lines 7-8Fig. 2, item 224) for enhancing load controlling of a Web site (see e.g., Fig. 2, item 220) including a plurality of individual servers (see e.g., page 6, lines 4-7; Fig. 2, items 210-216), said Web site using Hyper Text Transport Protocol (HTTP) (see e.g., page 6, lines 1-4; Fig. 3, items 230, 240, 250 and 260), comprising: means adapted for receiving load balancing instructions issued in any one server out of said plurality of individual servers (see e.g., page 7, lines 14-15), said load balancing instructions including directives that must be obeyed by said NCS (see e.g., page 7, line 15); and a filter to limit a scope of application of said directives (see e.g., page 7, line 18 through page 8, line 7); means adapted for complying with said load balancing instructions upon receipt (see e.g., page 7, lines 14-15), wherein the means for complying is adapted to comply with load balancing instructions that apply to a second server out of the plurality of individual servers (see e.g., page 4, lines 4-6; page 8, line 9 through page 10, line 12).

Claim 8 claims in a network having a plurality of individual servers (see e.g., page 6, lines 4-7; Fig. 2, items 210-216) and a Network Control Scheduler (NCS) (see e.g., page 6, lines 7-8Fig. 2, item 224) a computer readable medium for enhancing load controlling of a Web site (see e.g., Fig. 2, item 220) that uses Hyper Text Transport Protocol (HTTP) (see e.g., page 6, lines 1-4; Fig. 3, items 230, 240, 250 and 260), comprising instructions for causing a computer system to perform the following steps: in any one server out of said plurality of individual servers: issuing load balancing instructions to said NCS by passing said load balancing

instructions to said NCS in a NCS-control HTTP header (see e.g., page 14-15; Fig. 3, item 250), including the steps of: including, in the NCS-control HTTP header, directives that must be obeyed by said NCS (see e.g., page 7, line 15); and including, in the NCS-control HTTP header, a filter to limit a scope of application of said directives (see e.g., page 7, line 18 through page 8, line 7); receiving said load balancing instructions in said NCS from said any one server (see e.g., page 7, lines 14-15); and complying with said load balancing instructions upon receipt (see e.g., page 7, lines 14-15), wherein the any one server out of said plurality of individual servers is adapted to issue the load balancing instructions that apply to any of the plurality of individual servers (see e.g., page 4, lines 4-6; page 8, line 9 through page 10, line 12).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1, 7-8 stand rejected under 35 U.S.C. §102(e) as being anticipated by Dutta *et al.* (U.S. Patent No. 6,546,423 B1), hereafter “Dutta.”
2. Claim 3 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Dutta in view of Pavan (U.S. Patent No. 6,801,943 B1), hereafter “Pavan.”
3. Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Dutta in view of Pavan and further in view of Millard (U.S. Patent Pub. No. 2002/0087282 A1), hereafter “Millard,” and further in view of Subramanian *et al.* (U.S. Patent Pub. No. 2002/0194211 A1).
4. Claims 5-6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Dutta in view of Pavan, Millard and Subramanian and further in view of Colby *et al.* (U.S. Patent No. 6,625,643 B1).

ARGUMENT

1. REJECTION OF CLAIMS 1 AND 7-8 UNDER 35 U.S.C. §102(e) OVER DUTTA

Appellants respectfully submit that the rejection of claims 1 and 7-8 under 35 U.S.C. 102(e) over Dutta is defective.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987); see MPEP § 2131, p. 2100-69. Because each and every element of claims 1 and 7-8 is not found in Dutta, Appellants respectfully request overrule of the rejection under 35 U.S.C. 102(e).

In the above referenced Final Office Action, the Examiner alleges that Dutta teaches that the any one server out of said plurality of individual servers is adapted to issue the load balancing instructions that apply to any of the plurality of individual servers. The Office argues that Dutta teaches the ability of a server A to send a message to a firewall instructing the firewall to reduce the amount of traffic to itself. Even assuming, *arguendo*, that the Office is correct in this statement, the example in Dutta specified by the Office indicates, at best, an ability of a server to issue a message about itself. However, Dutta does not teach that a particular server A can issue a load balancing instruction that applies to another server B. To this extent, Dutta does not teach that its messages directly apply to a server other than the sending server A, such as server B. As such, the Office’s example does not issue load balancing instructions that apply to any (but rather only one) of the servers in the plurality of individual servers.

In contrast, the claimed invention includes “...wherein the any one server out of said plurality of individual servers is adapted to issue the load balancing instructions that apply to any of the plurality of individual servers.” Claim 1. As such, the load balancing instructions of the

claimed invention do not merely affect a single server, as in the Office's example in Dutta, but rather can directly apply to any of the plurality of individual servers. For example, server A may send a load balancing instruction to the NCS that instructs the NCS to decrease the load for a specific server B. Thus, the messages of Dutta do not teach the load balancing instructions of the claimed invention.

In the above referenced Final Office Action, the Examiner alleges that Dutta teaches an NCS-control HTTP header that includes both directives and a filter. Dutta teaches that "...Server A then becomes congested (heavily loaded), and sends a message to the firewall to either generally reduce the amount of traffic being directed to Server A, or else specifically to redirect the traffic being sent in accordance with load balancing rule X to another server." Col. 5, lines 18-24. To this extent, Dutta allows a server to send a message to the firewall to redistribute some or all of its traffic. However, Dutta does not teach that this message is in an HTTP header format. The Office further cites a passage in the background section of Dutta that describes the regulation of packetized information flow performed by a firewall as teaching the filter of the claimed invention. However, this flow regulation is not taught by Dutta as being sent in a message from a server to the firewall, much less the same message as the message to redistribute traffic.

The claimed invention, in contrast, includes "...issuing load balancing instructions to said NCS by passing said load balancing instructions to said NCS in a NCS-control HTTP header, including the steps of: including, in the NCS-control HTTP header, directives that must be obeyed by said NCS; and including, in the NCS-control HTTP header, a filter to limit a scope of application of said directives. Claim 8. As such, unlike in Dutta, the load balancing instructions of the claimed invention are in HTTP header format and include both a directive and a filter in

the same instruction. Thus, the message of Dutta does not teach the load balancing instruction of the claimed invention.

2. REJECTION OF CLAIM 3 UNDER 35 U.S.C. §103(a) OVER DUTTA IN VIEW OF PAVAN

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Appellants respectfully submit that the Dutta and Pavan references, taken alone or in combination, fail to meet each of the three basic criteria required to establish a *prima facie* case of obviousness. As such, the rejection under 35 U.S.C. §103(a) is defective.

Appellants initially incorporate the above enumerated arguments. Additionally, in the above referenced Final Office Action, the Examiner alleges that motivation or suggestion exists for combining the Dutta and Pavan references. However, Dutta performs load balancing, that is, performing some analysis on a packet of information received from a remote location and forwarding the packet to a selected server out of a number of servers for processing. Col. 1, lines 15-18. To this extent, the purpose of Dutta is correctly distributing packets among the servers. In contrast, Pavan discloses a network scheduler that schedules the use of a single shared resource such as a physical communication channel. Col. 4, lines 5-10. To this extent, while Dutta distributes a single packet among multiple servers, Pavan coordinates multiple communications on a single channel. As such, Pavan is in a field of art that is non-analogous to that of Dutta. Furthermore, as the goal of Pavan is correctly scheduling an order of task

09/925,353

performance on a single resource, it does not solve the same problem as Dutta, i.e. to balance resources among multiple machines. Thus, there is no motivation in the references themselves or in the art for combining the references. Accordingly, Applicants submit that the Office has failed to prove a *prima facie case* of obviousness.

In the above referenced Final Office Action, the Examiner further alleges that the cited references teach or suggest a share directive aimed at enabling an information sharing within all members of said plurality of individual servers and said NCS by depositing an HTTP header in the NCS that is added to all subsequent requests having a matching filter that are issued from the NCS to any server. Specifically, to the extent that the cited references teach a share directive, they do not teach or suggest that it is performed by depositing an HTTP header into requests having a matching filter that are issued from the NCS to any server.

3. REJECTION OF CLAIM 4 UNDER 35 U.S.C. §103(a) OVER DUTTA IN VIEW OF PAVAN, MILLARD AND SUBRAMANIAN

Appellants incorporate the above enumerated arguments.

4. REJECTION OF CLAIM 5-6 UNDER 35 U.S.C. §103(a) OVER DUTTA IN VIEW OF PAVAN, MILLARD, SUBRAMANIAN AND COLBY

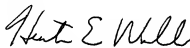
Appellants incorporate the above enumerated arguments.

CONCLUSION

In summary, Appellants submit that claims 1 and 2-8 are allowable because Dutta fails to teach each and every feature of the claimed invention and because the cited references, taken

alone or in combination, fail to meet each of the three basic criteria required to establish a *prima facie* case of obviousness.

Respectfully submitted,



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CLAIMS APPENDIX

Claim Listing:

1. A method for enhancing load controlling of a Web site including a plurality of individual servers and a Network Control Scheduler (NCS), said Web site using Hyper Text Transport Protocol (HTTP), said method comprising the steps of:
 - in any one server out of said plurality of individual servers:
 - issuing load balancing instructions to said NCS by passing said load balancing instructions to said NCS in a NCS-control HTTP header, including the steps of:
 - including directives that must be obeyed by said NCS; and
 - optionally, including a filter to limit a scope of application of said directives;
 - receiving said load balancing instructions in said NCS from said any one server; and
 - complying with said load balancing instructions upon receipt,
 - wherein the any one server out of said plurality of individual servers is adapted to issue the load balancing instructions that apply to any of the plurality of individual servers.
3. The method according to claim 1 wherein said directives includes:
 - flow-control directives;
 - sharing directives; and
 - NCS-queuing directives.
4. The method according to claim 3 wherein said flow-control directives include:
 - an increase-rate directive to require said NCS to increase a rate at which requests to said any one server are sent;
 - a decrease-rate directive to require said NCS to decrease a rate at which requests to said any one server are sent;
 - an increase-window directive to require said NCS to increase a number of jobs allowed to be simultaneously processed in said any one server; and
 - a decrease-window directive to require said NCS to decrease a number of jobs allowed to be simultaneously processed in said any one server.
5. The method according to claim 4 wherein said sharing directives include:
 - a share directive aimed at enabling an information sharing within all members of said plurality of individual servers and said NCS by depositing an HTTP header in the NCS that is added to all subsequent requests having a matching filter that are issued from the NCS to any server; and
 - a clear directive aimed at clearing a previous said information sharing.
6. The method according to claim 5 wherein said NCS-queuing directives include:
 - a lock directive aimed at locking resources identified by said filter; and
 - an unlock directive aimed at releasing previously locked said resources.
7. A system, in particular a Network Control Scheduler (NCS) for enhancing load controlling of a Web site including a plurality of individual servers, said Web site using Hyper Text Transport Protocol (HTTP), comprising:

means adapted for receiving load balancing instructions issued in any one server out of said plurality of individual servers, said load balancing instructions including directives that must be obeyed by said NCS; and a filter to limit a scope of application of said directives;

means adapted for complying with said load balancing instructions upon receipt,

wherein the means for complying is adapted to comply with load balancing instructions that apply to a second server out of the plurality of individual servers.

8. In a network having a plurality of individual servers and a Network Control Scheduler (NCS) a computer readable medium for enhancing load controlling of a Web site that uses Hyper Text Transport Protocol (HTTP), comprising instructions for causing a computer system to perform the following steps:

in any one server out of said plurality of individual servers:

issuing load balancing instructions to said NCS by passing said load balancing instructions to said NCS in a NCS-control HTTP header, including the steps of:

including, in the NCS-control HTTP header, directives that must be obeyed by said NCS; and

including, in the NCS-control HTTP header, a filter to limit a scope of application of said directives;

receiving said load balancing instructions in said NCS from said any one server; and complying with said load balancing instructions upon receipt,

wherein the any one server out of said plurality of individual servers is adapted to issue the load balancing instructions that apply to any of the plurality of individual servers.

EVIDENCE APPENDIX

No evidence is entered and relied upon in the appeal.

RELATED PROCEEDINGS APPENDIX

No decisions rendered by a court or the Board in any proceeding are identified in the related appeals and interferences section.